EMERGENCY PLANNING

This 1995 Post-Register photo shows a helicopter dropping water on a wildfire near ANL-West. This fire burned about 2,000 acres.

The land INEEL sits on is a high desert ecosystem. Wildfires occur about every three years, on average.

In this photo from the Post-Register, Oneida County emergency responders remove a victim of an accident involving radioactive materials near Devil's Creek Reservoir near Malad, at a training exercise designed to assess and improve planning for emergency response.

Lessons learned from previous fires and drills were applied during this year's fires, and we learned some things we'll apply next time there's a wildfire on the site.

Emergencies involving radioactive materials can occur on the INEEL, but can also happen on transportation routes or in other enterprises that use radioactive materials, (i.e., hospitals, research facilities, technology companies or engineering firms). Although the first goal is to keep emergencies from happening, the second goal is to be prepared for them when they do. A timely and capable response reduces the impacts of an emergency. That's why planning, training and drills are important.

DOE takes the lead role in responding to and mitigating incidents that happen on the INEEL. If a radiological emergency takes place off the INEEL, or if the effects of an INEEL emergency could leave the site, however, local, state or other federal agencies may have the lead. When it comes to planning for and responding to radiological emergencies in Idaho, federal, state and local agencies, and commercial enterprises share responsibilities, so coordination must be part of the planning process. Indian tribes, which are sovereign entities, are also involved.

The Idaho Military Division's Bureau of Disaster Services maintains the overall planning responsibility and coordination role for state emergency planning. The State's emergency response plans establish who does what when natural or man-caused emergencies happen. For radiological emergencies, the Oversight Program provides technical support to state and local agencies during both the planning process and actual events. Oversight Program technical staff gather data, assess potential health and environmental effects, and advise state and local agencies how to respond. They also coordinate with those in charge of an incident to provide information to the public.

A key part of effective emergency response is not waiting until something happens to see how plans work. The Oversight Program participates in training and practice drills for local responders. This past year, several fire departments and law enforcement agencies participated in training designed to help responders identify, respond, and control an emergency situation involving radioactive material. "I've been impressed with the local agencies that have trained and participated in drills this past year in Idaho," says Chris Briggs, Health Physicist for the INEEL Oversight Program. "The training program developed for the State of Idaho and delivered by the Eastern Idaho Technical College has really proven itself."

INEEL Emergencies

Three different DOE Operations Offices manage parts of the INEEL. The Naval Reactors Program Pittsburgh Office is responsible for the Naval Reactors Facility, DOE's Chicago Operations Office manages Argonne National Laboratory-West, and DOE's Idaho Operations Office manages the rest of the INEEL. The three offices maintain separate but consistent emergency plans. INEEL maintains an overall plan to respond and mitigate the consequences of emergencies that may occur on the INEEL.

Emergency plans for the INEEL consolidate all emergency-planning requirements for federal, state and local agencies. They include information for offsite agencies as well as INEEL facility actions and requirements.

In some cases, the INEEL may need state and local resources to respond to emergencies, while in others, state and local agencies may need INEEL resources. That's why jurisdictions develop mutual aid agreements. Several agreements are in place, including several which allow local fire departments to respond to fires on the INEEL and allowing the INEEL fire department to respond to fires offsite.

The State's Emergency Plan will soon have more details for responding to radiological emergencies related to INEEL facilities. Not only will this effort develop a more coordinated and efficient response by state agencies, it will also ensure consistency between INEEL's plans and the State's plans. Idaho also coordinates with other states through the Western Governors Association to plan and prepare for emergencies involving DOE shipments.

Fires on the site

Fire is a part of the high desert ecosystem in which the INEEL is located. The public may be concerned about health risks posed by increases in smoke and particulates. Wild fires, regardless of where they occur, release radiation from natural sources and historic global weapons testing trapped in vegetation and soil. Dust from burned areas can blow around until it is tamed by new vegetation or precipitation.

Much of the INEEL is open desert, and risks from fires there are comparable to risks from fires elsewhere. When range fires threaten INEEL facilities or contaminated areas, however, fires on the INEEL can pose additional risks.

Oversight Program health physicists—specialists in the health effects of radiation—work with federal, state, local and tribal officials to determine if fires on the INEEL pose additional health risks from radioactive materials on the site. If they do, the Oversight Program recommends actions to protect the public and state and local responders.

When the large Tea Kettle Fire threatened the Test Reactor Area and the Idaho Nuclear Technology and Engineering Center in July, Oversight took additional measures to assess potential health risks and provide information to the public and state and local officials.

Oversight's 12 pressurized ion chambers, usually referred to as PICs, measures current gamma radiation. Each one is equipped with a modem and radio, and transmits updated information every five minutes. The information is available live in the internet at http://oversite.inel.gov/. Oversight's first set of fire monitoring data was collected by PICs.

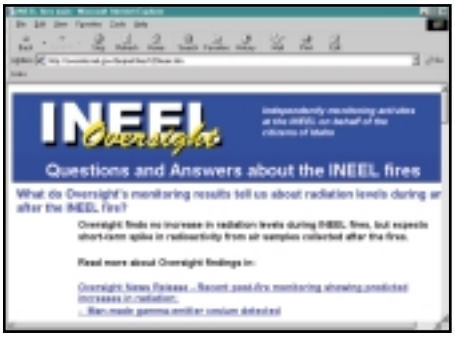
Because these air samplers run all of the time as part of Oversight's environmental surveillance program, we sometimes refer to them as our "routine" samplers. They pull air through filters which are changed each week.

Analysis of filters from routine air samplers at Idaho State University provided our second set of data.

Additional high-volume samplers, not part of our routine monitoring but maintained for emergencies, were activated during the fire, collecting samples which yielded a fourth set of data. Filters were sent to EPA's National Air and Radiation Laboratory for additional analysis, providing yet another data set.

The web site which shows live PIC data also provides current information on temperature, wind direction and speed, and a host of other measurements at http://oversite.inel.gov/.

Other monitoring results and analysis were posted on Oversight's web site at http://oversite.inel.gov/deqinel/index.htm, along with a year's worth of background data to compare readings with.



"In emergencies, we have to make rapid assessments of health risks from initial measurements, and then we perform additional checks to make sure our emergency system is reliable," said Senior Health Physicist Doug Walker. "We also have a very personal stake in determining potential health risks," added Health Physicist Luke Paulus. "As the scientists out in the field collecting these measurements, checking monitoring equipment and working with emergency responders, we want to know what's out there."

Oversight health physicists concluded, after examining several sets of monitoring data, that the fire did not pose appreciably higher health risks just because it occurred on the on the INEEL. Data evaluated included:

- Gamma radiation readings recorded every 5 minutes from 13 locations on and around the INEEL by pressurized ion chambers.
- Laboratory analysis from filters collecting airborne particles on a continuous basis at 10 locations on and around the INEEL.
- Laboratory analysis from air filters from 8 additional high-volume samplers activated in response to the fire.
- Laboratory analysis from air filters from a super high-volume sampler deployed at the Big Lost River Rest Area.
- Results from special laboratory analysis or 32 air samples from the high-volume filters were sent to the U.S. Environmental Protection Agency National Air and Radiation Environmental Laboratory in Montgomery, Alabama.

Investigations give truck stops a clean bill of health

On October 17, 1999, a routine inspection of a truck carrying a commercial shipment of radioactive material in Richland, Washington revealed the truck had developed a leak sometime during its 4-day trip from Oak Ridge, Tennessee.

Surveys completed in Washington and Tennessee came up clean. "We knew from the outset that chances of finding contamination were slim," explained Oversight Program Coordinator Kathleen Trever, "But because radioactive material was involved, we took extra steps to reassure the public."

The truck was carrying 7 empty containers that once contained resin, the material condensed out of water used to cool spent nuclear fuel. Liners and rings for the containers were also on the truck. A tarp covered the entire load. When the truck and its load were inspected in Richland, material had leaked from the inner liner onto the container lid. It was on the outside of the container, but inside the tarp.

Oversight health physicists, state emergency responders, and county officials decided to ask DOE's Radiological Assistance Program to send a team to check the two truck stops. "It speaks well for the team that they were willing to help out even though this shipment had no connection to DOE," says Oversight Health Physicist Doug Walker."

The team used a sensitive vehicle-mounted gamma radiation-detection instrument, which was developed to survey large areas at INEEL, in the parking lots of the two truck stops.

- Gamma measurements collected quarterly by 112 electret ionization chambers deployed on and around the INEEL.

Oversight compared results with EPA standards established to protect human health and the environment. Results were also compared with "background" radiation, which includes natural radiation from cosmic sources, minerals in the earth's crust and radon gas, and materials released during historic weapons testing.

Initial air sampling during the INEEL fires showed gross alpha and gross beta radioactivity levels consistent with historical background levels. Slight increases in these measurements occurred following the fires, as Oversight scientists expected, due to resuspension of naturally occurring radionuclides found in soil.

Minute quantities of Cesium-137 were detected in 2 of 6 air samples from enhanced high-volume air sampling at the Big Lost River Rest Area. Of the 32 samples sent to the EPA laboratory, minute quantities of single man-made radioisotopes were measured in two samples, one at Atomic City (Plutonium-239) and one in Idaho Falls (Strontium-90). The 2 EPA measurements were pushing the detection capabilities of EPA's state-of-the-art instruments and may or may not be real detections. Nevertheless, all of the measurements of man-made radionuclides were well below standards set by the EPA to protect public health. Therefore, the small quantities measured would not cause appreciable increases in health risks, even to someone exposed to them year-round.

The source of these man-made radionuclides is difficult to pinpoint. Not only were the quantities small, we did not find them in combination with other man-made radionuclides, as would normally be expected from INEEL operations. They could also be attributable to atmospheric fallout from historical weapons testing.

Electret ion chambers, called EICs, are part of Oversight's ongoing Environmental Surveillance Program. Deployed four times a year and left in the field for three months, they provide a cumulative measure of gamma radiation. EICs collected in September provided data about radiation levels during and after the fires.

Oversight's high desert air sampler, which samples very high volumes of air, was deployed at the Lost River Rest Area after this summer's fires. It collected particles which included windblown dust after the fire, providing a sixth set of data.

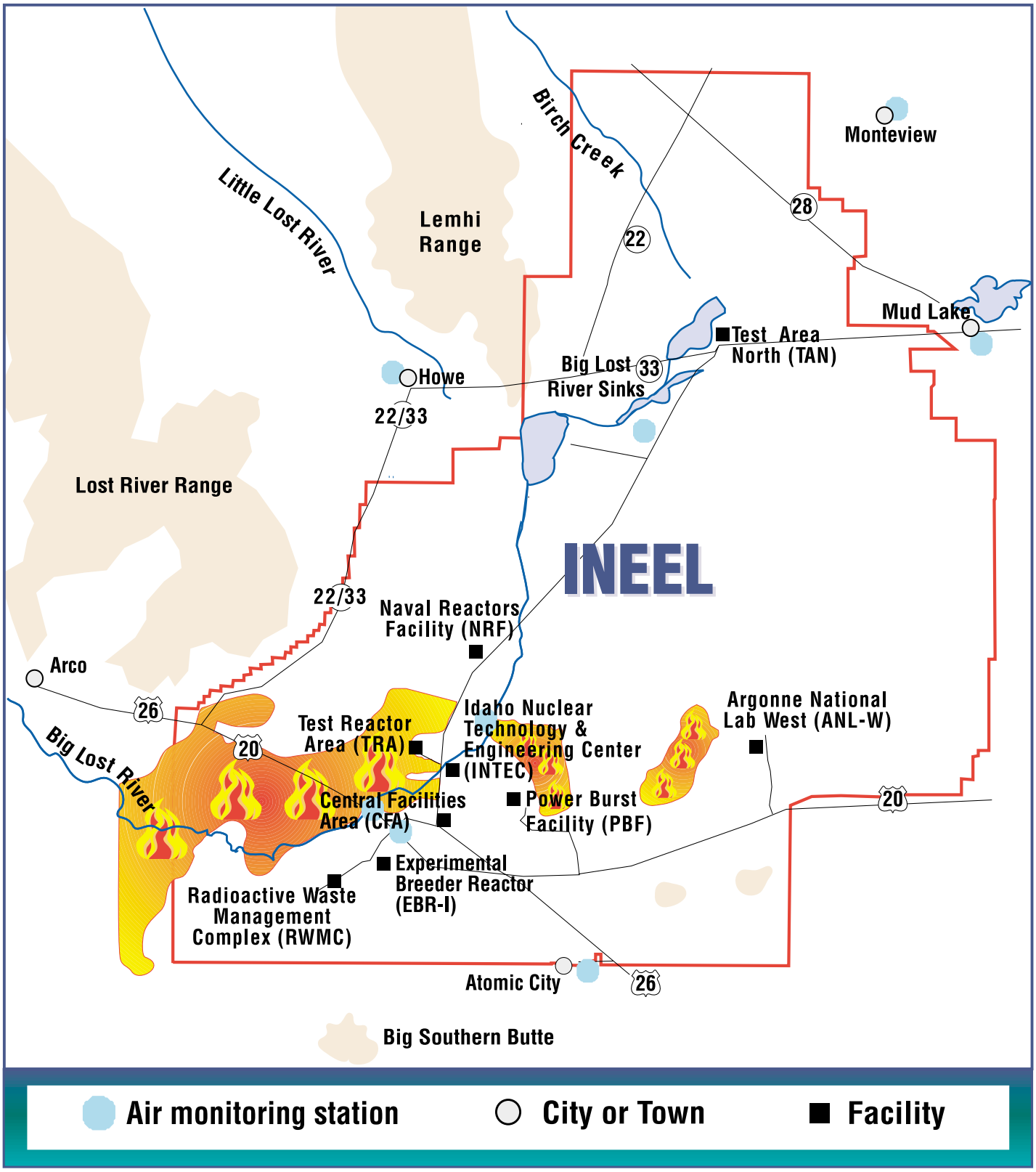
Next Steps

After emergency situations end, we review our performance to see how we can improve our plans, training and response. Because of other fires on DOE sites in 2000, we will also meet with representatives from Idaho and other states, as well as federal planners, to benefit from our experience.

We learned that we should have a clear map of contaminated areas on the site, because information about contamination is scattered throughout many documents and maps. A single source of information would be useful, and an effort to develop a comprehensive and easy-to-understand map would fit well with our plans to develop a site-wide soil sampling grid.

The data we collected has been valuable and available from no other source. It constitutes the most comprehensive monitoring effort done during this summer's fires at INEEL. The data was collected and analyzed by an organization independent of the INEEL, working on behalf of the citizens of Idaho.

We used our web site to disseminate fire-related monitoring information quickly. Monitoring results were posted soon after they were received, both as raw data and as a narrative interpretation of the data. In the days following the fire, we posted more information about the fire and its aftermath, a question-and-answer column, and a year's worth of background data for people to compare to the results collected during and after the fires. Detailed monitoring results were also sent out in a special edition of the *Monitor* newsletter, and a special display of fire information was prepared for the Twin Falls County Fair in September.



As they have in past years, range fires burned parts of the INEEL in 2000:

- From July 26 to 29, fires—later dubbed the Tea Kettle Complex—burned close to 50,000 acres in the southeast of the INEEL, from close to the Big Lost River to the Test Reactor Area and toward the Idaho Nuclear Technology and Engineering Center.
- On July 26th and 27th, a small fire, less than 100 acres, burned west of Argonne.
- On August 5th and 6th, a second fire burned near Argonne, about 5,000 acres in size.
- On September 17th and 18th, a fire burned in the vicinity of the Power Burst Facility and the Waste Experimental Reduction Facility, reaching about 8,000 acres in size.